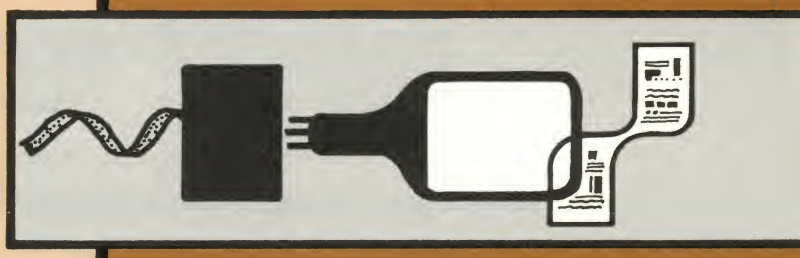

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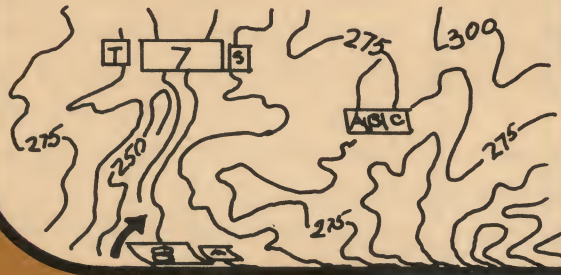


GRAPHICS

RECEIVER

PRINTER

GRAPHICS RECEIVER/PRINTER

developed by UNITED AIRCRAFT CORPORATE SYSTEMS CENTER*

DESCRIPTION

The **Graphics Receiver/Printer** is a device for high-speed conversion of a wide variety of digital inputs to printed data in the form of alphanumerics and line drawings.

CAPABILITIES

The **Graphics Receiver/Printer** operates as a real time communications teleprinter and/or plotter, which permits an increase in transmission speed over available printers or plotters, and a greater than order of magnitude improvement over standard facsimile speeds. This high speed is achieved with no increase in communication bandwidth through the utilization of highly efficient digital transmission coding. In the plotting mode, prerecorded backgrounds may be superimposed automatically on graphic and/or alphanumeric information. Graphic data is reproduced as smooth curves without the segmented or angular characteristics of most available systems. The entire alphanumeric symbol vocabulary is available for both the plotting and printing modes. The output of the **Graphics Receiver/Printer** is a permanent hard copy of high contrast produced by a wholly dry process.

OPERATION

Information from facsimile or other digital communications circuits is interpreted by the control logic as functional commands and output data. The graphics generator converts output data to smoothed analogy x-y voltages for presentation as plotted lines. These x-y voltages control the tracing of the desired line plot in the cathode ray tube image generator. Alphanumeric data is similarly converted to x-y voltages by the character generator and then converted to an optical image by the image generator. A background can be selected by the incoming digital data for superposition on the final copy. A dry electrostatic photographic process records the optical images in the hard copy processor.

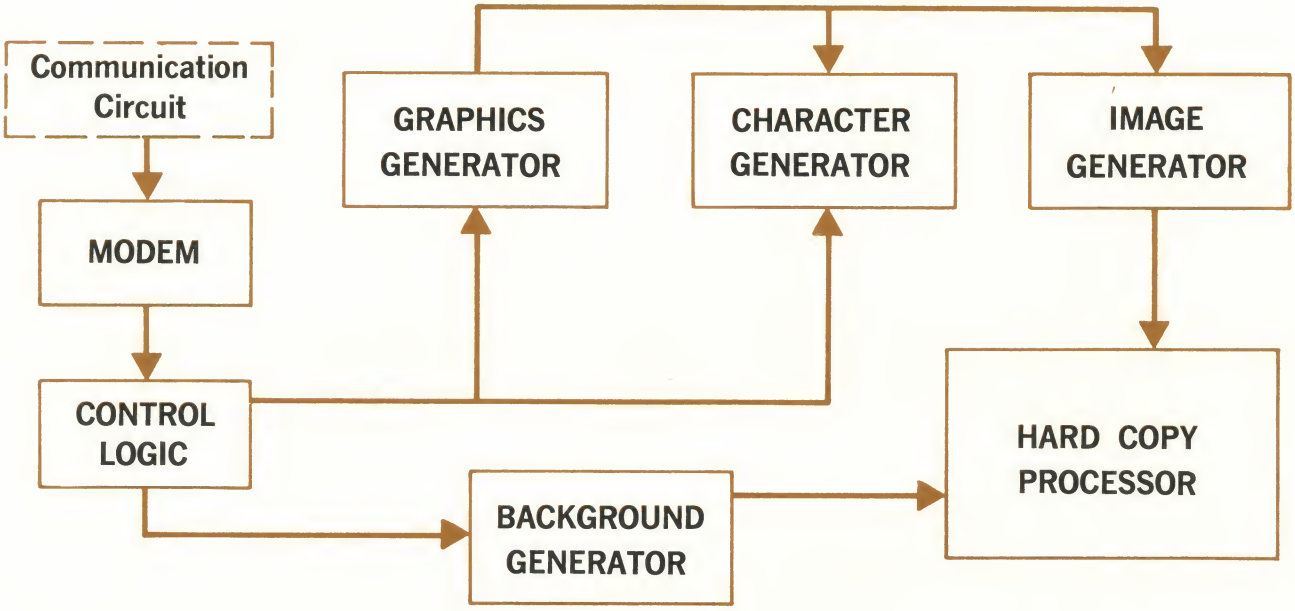
APPLICATIONS

The **Graphics Receiver/Printer** provides real time reproduction of digital inputs in the form of alphanumeric and/or line drawings. The availability of such information for immediate interpretation and evaluation in nonperishable format will significantly improve man's decision-making process and the total performance of complex information systems involving:

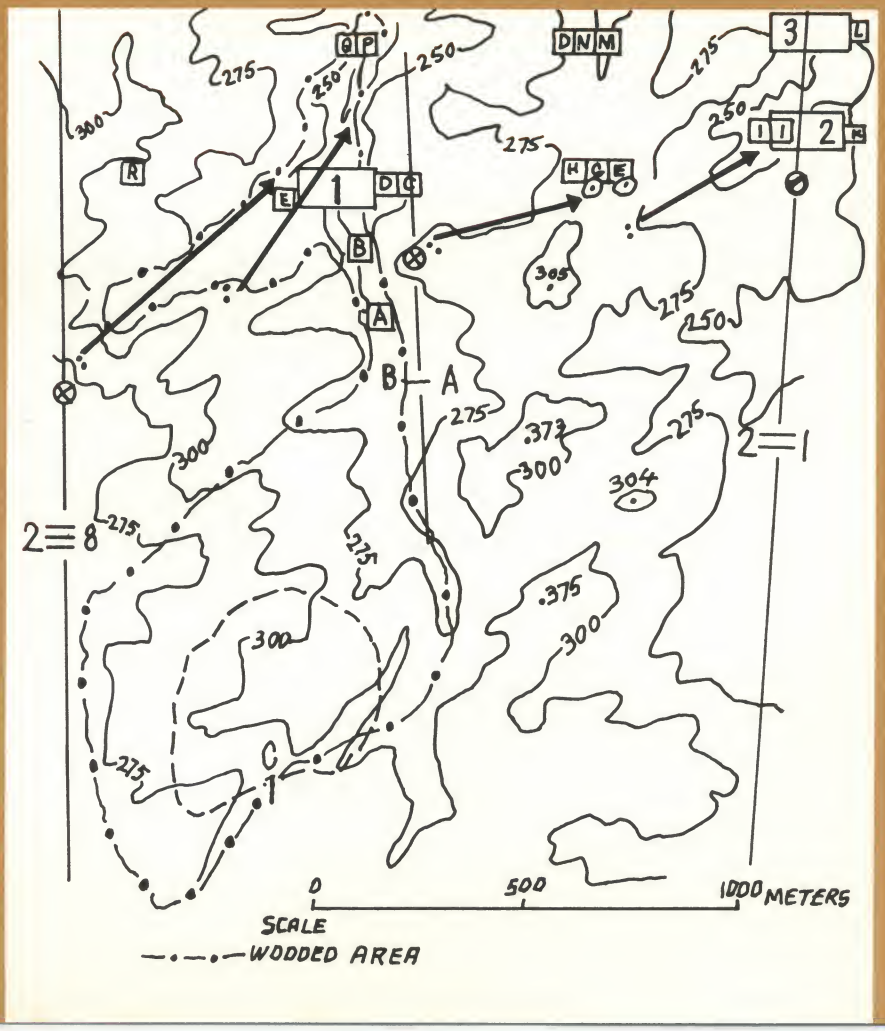
- Military Intelligence
- Battle Orders
- Production Control
- Fallout and Chemical Cloud Patterns
- Weather Observation and Forecasting
- Inventory Control
- Command & Control
- Traffic Control
- Logistic Planning & Control
- Target/Weapon Status

*under AFSC sponsorship

OPERATION



TYPICAL OUTPUT SITUATION MAP



GRAPHICS RECEIVER/PRINTER SPECIFICATIONS

• OPERATIONAL

INPUT

- Baudot or ASC11 Code at 1,200 to 2,400 bits/second
- EIA standard interface (RS-232-A)
- Standard 3kc voice bandwidth

OUTPUT

- High contrast black image or durable paper of archival quality
- 12-inch-wide roll stock (18 inch width also available)

SPEED

- to 3,000 words/minute
- to 2,000 inches of line drawing/minute
- 120 to 960 scans per minute facsimile (optional)

PRECISION

- Graphical data position held to ±1%

SYMBOL VOCABULARY

- 64 alphanumeric symbols

BACKGROUNDS

Prerecorded backgrounds determined by user requirements

• PHYSICAL

SIZE

- Height, 56 inches
  Width, 30 inches
  Depth, 60 inches

ENVIRONMENT

- 60°-100°F ambient, 20%-80% relative humidity

POWER

- 220 volts, 60 cps; 30 amps

• MAINTENANCE

CONSTRUCTION

- Modular • Plug-in

TEST

- Self-test circuits built in

For Additional Information, contact Mr. R. Shuart
Farmington, Connecticut 203-677-9731

United Aircraft CORPORATE SYSTEMS CENTER/FARMINGTON, CONNECTICUT

DATA HANDLING

GRAPHICS RECEIVER/PRINTER

Equipment Engineering

The Graphics Receiver/Printer is a device for high-speed conversion of digital inputs to printed data in the form of alphanumerics and line drawings. It can be modified to accept 120 scan/minute facsimile signals to produce conventional facsimile maps.

Functional commands in the form of specific combinations of BAUDOT coded data are interpreted by the Graphics Receiver/Printer as instructions to:

Draw either solid, dashed, or dotted lines

Draw alphanumeric characters on a line-per-line basis

Intersperse alphanumeric characters on a line drawing

Project one of many backgrounds to be superimposed with plotted digital data

Permanent hard copies of images of alphanumerics and lines from the cathode ray tube output and associated slides of background information are produced on continuous role paper.

SPECIFICATIONS

INPUT
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- EIA standard interface (RS-232-A)
- Standard 3 kc voice bandwidth

OUTPUT
- High contrast black image on durable paper of archival quality
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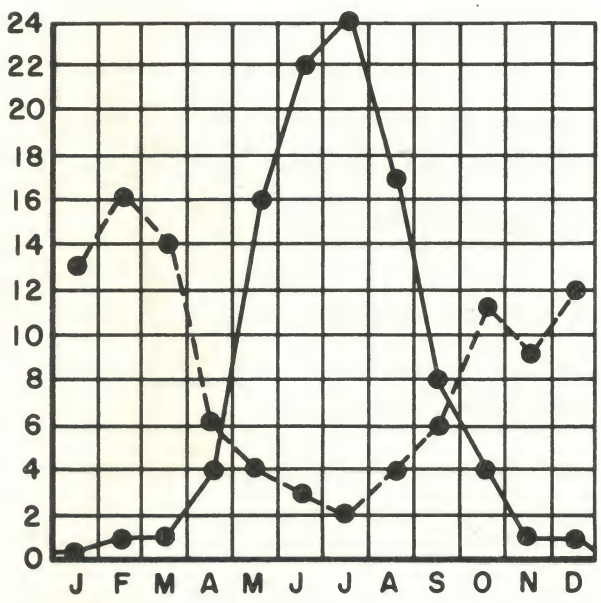
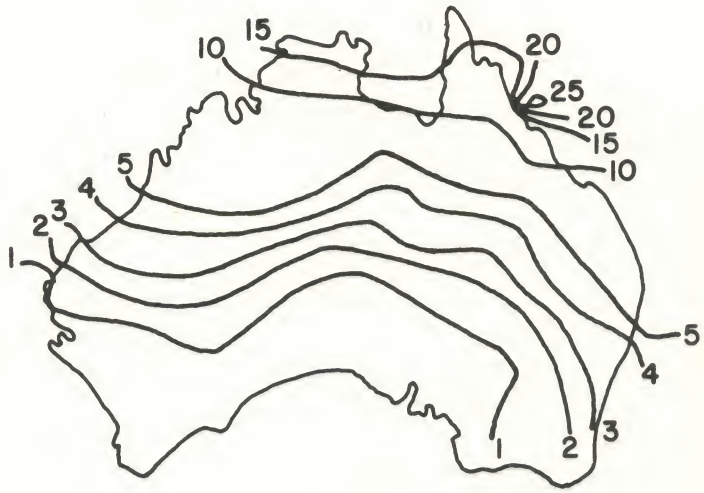
FARMINGTON, CONNECTICUT

GRAPHICS RECEIVER/PRINTER



REPRODUCTION OF TYPICAL OUTPUTS



UACSC will be pleased to discuss specific equipment problems and the utilization of UACSC capabilities for their solution.

For Additional Information, contact Mr. R. Shuart
Farmington, Connecticut 203-677-9731

DATA HANDLING

•COMMUNICATION NETWORKS• Systems Engineering

United Aircraft Corporate Systems Center (UACSC) has been involved in a variety of systems design and integration projects, ranging from design of major systems to the analysis, design and integration of subsystems within large systems. These projects typically involve the design of communication networks for transmission of weather information from data acquisition sources to data processing facilities, and for delivery of processed data to display equipment for end users.

In the design of systems for handling weather data, communications networks have, for the most part, involved landline circuits with operating speeds from 100 through 3000 words per minute. In addition, the utilization of higher speed transfer of data between automated data handling and processing centers has been investigated for some applications. In two related projects, the communications design included an air-to-ground VHF radio network for transmission of both voice and data, and integration of this information into a ground system.

Communications networks for the transfer of large volumes of information, with numbers of individual sources and sinks well up in the hundreds, usually are interconnected by a large number of party-line circuits. In most cases there have been several major switching and data handling centers, and a larger number of lower-order centers. Except where otherwise constrained, these designs have been based on the use of automated electronic digital processors at the major centers for the control of the flow of data on the individual circuits, and for the interchange of data between circuits by a store-and-forward message-switching technique, or, where necessary, by circuit switching. Many of the designs have featured a remote query capability, in which the automated centers can provide rapid responses to requests for messages in storage.

United Aircraft CORPORATE SYSTEMS CENTER
FARMINGTON, CONNECTICUT

•COMMUNICATION NETWORKS•

A characteristic of systems for the dissemination of weather data is the transfer of data in the form of individual messages, each of which is needed by a large number of individual users. This is in contrast to many communications systems, where each message is specifically addressed either to a single receiving location, or to a relatively small number of receivers. A systems-oriented approach to the design of the stet is essential, with the layout of the communications networks constituting only one aspect of the complete systems design.

A communications sybsystem design has been developed for the proposed Common Aviation Weather System for support to the Air Traffic Control System and to all other aviation interests in the United States. Systems analysis and design studies were performed to develop alternative approaches to the design of the communications networks and dis plays for implementation in the 1970-75 time period. A design was also developed for a modernized data handling and communications system to handle weather data and air traffic management information in the more immediate future. This system featured not only routine "broadcast" of weather data to groups of users, along with request/reply service to satisfy additional non-routine requirements, but also specifically addressed air traffic messages disseminated on a point-to-point basis.

UACSC will be pleased to discuss specific system problems and the utilization of UACSC capabilities for their solution.

For Additional Information, contact Mr. R. Shuart
Farmington, Connecticut 203-677-9731

UNITED AIRCRAFT CORPORATE SYSTEMS CENTER